

Foreword

There is no question that digital technologies have profoundly transformed our lives over recent decades. Education is no exception with digital technologies having increasingly permeated schools and higher education institutions. The COVID-19 pandemic accelerated the digital transformation in education and led to an unprecedented increase in the use of digital education technologies, which have now become a key resource for OECD education and training systems. If used effectively, these technologies promise to transform teaching and learning practices and enhance educators' ability to provide high-quality instruction, to reduce learning inequalities through more differentiated learning approaches, and to create more inclusive and efficient education systems. In schools and higher education institutions, many expect that digital tools are here to stay and that their role in teaching and learning will continue to grow.

However, there is a broad consensus that the use of digital education technologies should not be an end in itself but serve the broader goals of education systems. This report thus focuses on policies that can enable digital education technologies to contribute to three goals that are widely shared among OECD education systems: quality, equity and efficiency. If enabling conditions are in place to support their effective use, digital education technologies have the potential to enhance the impact of teaching and learning along each of these dimensions: 1) by enhancing the quality of teaching and students' learning experience; 2) by promoting equity, access and inclusion through personalised learning tools and assistive technologies; and 3) by saving costs and making educators' work more efficient.

While the experience of the past few years has given us a glimpse of the potential of digital education technologies, the COVID-19 pandemic also exposed shortcomings in the extent to which digital technologies are currently enabling high-quality teaching and learning and underlined the need for supportive policies and conditions to make use of their potential. These experiences have also exposed the reality that many education systems are far from providing equitable access to high-quality digital technologies and cast light on some of the risks associated with their unregulated use. These developments raise the question of how education systems can harness the full potential of digital education, while mitigating associated risks.

In light of the significant challenges and opportunities related to digital education technologies, it is imperative to create the conditions that can enable actors at all levels of the education system to make the most of digital education. Prior research and analyses on the use of digital technologies in education have focused on the availability, use and effectiveness of digital resources in the classroom. Much less attention has been paid to the role system-level policies play in supporting or impeding the effective and equitable use of digital resources in education. This report seeks to provide the foundation for future work to fill this gap, and to guide governments in shaping the development of digital education.

Offering a range of perspectives for governments and education stakeholders, this report provides a comprehensive review of current trends and emerging policies, covering school education, vocational education and training (VET) and higher education. It also analyses enabling factors that can support quality, equity and efficiency in the use of digital technologies in education systems, taking stock of what we know about digital education policies and investigating promising international practices. It aims to support education systems in designing a comprehensive and integrated system-level policy environment

that enables an effective and equitable use of digital technologies in education. As such, the focus of this report is on providing guidance to policy makers about how to optimise the use of digital technologies in the short- and medium-term.

However, the analytical framework proposed in the report also takes a longer-term perspective, recognising recent developments related to the rapidly improving capabilities of Artificial Intelligence (AI). These developments bring new focus to the role of education policy in regulating the use of AI in schools and higher education institutions, as well as in preparing learners for an AI-driven future. Whilst other OECD projects are investigating frontier uses of digital technologies and their eventual impact on education systems, this report is primarily concerned with the immediate policy implications of digital technologies within the existing institutional arrangements of OECD and European Union (EU) education systems. The report also acknowledges that, in the longer term, education systems might undergo more transformational changes in terms of the spaces and formats in which learning takes place, the education actors involved and the human resources policies in place. The analytical framework presented in this report nevertheless provides a solid basis for education systems to examine their digital education strategies and policies, and work together on developing a more coherent and effective policy ecosystem for digital education, including through the OECD project on Resourcing School Education for the Digital Age: Effective Digitalisation and Future-Ready Teachers.

This report has benefitted from generous financial support from the European Commission. It was prepared within the context of a joint European Commission-OECD project on the Enabling Factors of Digital Education and Skills (EFDES), which provided analytical support and research-based evidence to the European Commission to inform a Commission proposal for a Council Recommendation on the key enabling factors for successful digital education and training. The proposal was adopted by the European Commission on 18 April 2023 alongside a proposal for a Council Recommendation on improving the provision of digital skills in education and training. The two recommendations aim to support EU Member States and the education and training sector in providing high-quality, inclusive and accessible digital education and training and in developing the digital skills of European citizens. This report benefitted from inputs from officials of the Digital Education Unit within the European Commission's Directorate-General for Education, Youth, Sport and Culture (DG EAC), including Georgi Dimitrov, Ivana Juraga, Dimitra Rapti and Reinier Van der Weele. The OECD team would like to thank them for their invaluable feedback, suggestions and contributions to the report and gratefully acknowledge the financial support provided by the European Commission.

Within the OECD Directorate for Education and Skills, the preparation of this report was a collaborative effort between the teams for Resourcing School Education for the Digital Age and Higher Education Policy, both part of the Policy Advice and Implementation Division under the leadership of Paulo Santiago. The development of this report was guided by Karine Tremblay (Senior Analyst, Resourcing School Education for the Digital Age) with support from Thomas Weko and Simon Roy (Senior Analysts, Higher Education Policy, respectively until December 2022 and since January 2023). The analytical framework underpinning the report was developed by Andreea Minea-Pic (Analyst, Resourcing School Education for the Digital Age), under the guidance of Karine Tremblay, and with contributions from Luka Boeskens and Katharina Meyer (respectively, Analyst and Young Associate, Resourcing School Education for the Digital Age). Karine Tremblay and Gillian Golden (Analyst, Higher Education Policy) provided extensive comments for all chapters. The various chapters were co-authored as follows:

- Chapter 1: Luka Boeskens, Katharina Meyer and Andreea Minea-Pic.
- Chapter 2: Katharina Meyer and Andreea Minea-Pic.
- Chapter 3: Luka Boeskens and Roger Smyth (Higher Education consultant).
- Chapter 4: Andreea Minea-Pic, Ana Moreno-Monroy (Analyst, Higher Education Policy) and François Staring (Analyst, Higher Education Policy), with contributions from Gillian Golden.

- Chapter 5: Andreea Minea-Pic and Simon Roy, with contributions from Katharina Meyer, Ana Moreno-Monroy and Karine Tremblay.
- Chapter 6: Andreea Minea-Pic and Ana Moreno-Monroy.
- Chapter 7: Luka Boeskens and Thomas Weko, with contributions from Andreea Minea-Pic.
- Chapter 8: Luka Boeskens, Andreea Minea-Pic and Thomas Weko, with contributions from Katharina Meyer.
- Chapter 9: Gillian Golden and Karine Tremblay, with contributions from Andreea Minea-Pic and Katharina Meyer.

The authors acknowledge and express their gratitude to colleagues from the Directorate for Education and Skills for their valuable input and advice at different stages of the report's production. In particular, the report benefitted from the feedback and suggestions of the members of the Digitalisation Cluster of the Directorate for Education and Skills at the OECD, and in particular from Lucie Cerna, Francesca Gottschalk, Stéphanie Jamet, Cecilia Mezzanote, Mario Piacentini and Stéphan Vincent-Lancrin. Marika Prince co-ordinated the report production and administrative aspects, with support from Daiana Torres Lima, Katharina Meyer and Rachel Linden for report production, editing and communications, alongside Gillian Golden, Katharina Meyer and Andreea Minea-Pic in the editorial process.

The team would also like to thank Andreas Schleicher (Director of Education and Skills) and Paulo Santiago (Head of Division, Policy Advice and Implementation) for their overall guidance and support for the project, and feedback on the report draft.

Last, but not least, the authors also express their gratitude to delegates from the OECD Group of National Experts on School Resources, the OECD Group of National Experts on Higher Education and the Education Policy Committee for their comments on and inputs to this report. They have provided valuable policy examples and analytical guidance to its preparation, alongside representatives from Business at OECD (BIAC) and the Trade Union Advisory Committee to the OECD (TUAC) who had the opportunity to comment on drafts of this report.



From:
Shaping Digital Education
Enabling Factors for Quality, Equity and Efficiency

Access the complete publication at:
<https://doi.org/10.1787/bac4dc9f-en>

Please cite this chapter as:

OECD (2023), "Foreword", in *Shaping Digital Education: Enabling Factors for Quality, Equity and Efficiency*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/65d70dbc-en>

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